REMARKS

This Amendment is filed in response to the Final Office Action mailed on December 30, 2005. In the Office Action, Claim 20 is rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over "Acetylation of Solid Wood Using Microwave Heating, Part 2. Experiments in Laboratory Scale" by Brelid et al. Further, Claims 19 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Brelid et al. in view of U.S. Patent No. 4,804,384 (Rowell et al.). Claims 1-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Brelid in view of U.S. Patent No. 3,094,431 (Goldstein et al.).

By the present Amendment, Applicants amended Claims 1, 12, 19 and 20 and canceled Claims 11, 13 and 15. Attorney for Applicants appreciates the opportunity afforded by Examiner Kiliman, and Examiner Chaney to conduct telephonic interviews which took place on Monday, June 19, 2006 and Tuesday, June 20, 2006, respectively. In those interviews, Examiners Kiliman and Chaney indicated that, if it could be shown that heating in a frequency range, such as between 6 MHz and 30 MHz, would yield unexpected results, that the claims would be held allowable. In response, Applicants submit, along with this Amendment, a Declaration explaining the disadvantages of the prior art, the advantages of the present invention, and the unexpected results of heating in this range. Applicants assert that the application is in condition for allowance in view of the amendments, Declaration, and for the reasons that follow. Notice to that effect is requested.

Claim 20 is rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over "Acetylation of Solid Wood Using Microwave Heating, Part 2. Experiments in Laboratory Scale" by Brelid et al.; Claims 19 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Brelid et al. in view of U.S. Patent No. 4,804,384 (Rowell et al.); and Claims 1-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Brelid in view of U.S. Patent No. 3,094,431 (Goldstein et al.).

However, Applicants amended independent Claims 1, 19 and 20 to refer to methods for esterifying wood and/or the products of esterification in which impregnated wood is heated in a frequency range of about 6 MHz to about 30 MHz to produce esterified wood. Applicants assert that support for this amendment can be found in the specification on page 4, lines 18-19. More specifically, Applicants state that on page 4 that the wood can be heated in a frequency "ranging anywhere from about 6 MHz to about 915 MHz".

None of Brelid et al., Rowell et al., or Goldstein et al., taken either singly or in combination disclose, teach or suggest heating of wood in a frequency range of about 6 MHz to about 30 MHz. Brelid et al. disclose heating of wood at a frequency of 2450 MHz which is a microwave range and well above the claimed frequency range. Nowhere in the reference is there a disclosure or teaching that the frequency can be in the range from about 6 MHz to about 30 MHz.

For a reference to be anticipatory, the reference must exactly describe the claimed invention. Because Brelid does not describe a range from about 6 MHz to about 30 MHz, the reference is not anticipatory. Accordingly, the rejection of Claim 20 as being anticipated by Brelid et al. is improper.

Furthermore, Claims 1, 19 and 20 are not obvious in view of Brelid et al. For a *prima facie* case of obviousness, there must first be either a suggestion or a motivation in the prior art reference or knowledge generally available to modify a reference. There must be a reasonable expectation of success, and all the claim limitations must be taught or suggested in the prior art references. As the reference does not teach or suggest a frequency range from about 6 MHz to about 30 MHz, Applicants assert that Claims 1, 19 and 20 are not obvious in view of Brelid et al.

Rowell et al. is merely relied upon to teach impregnation times. Goldstein et al. is merely relied upon to teach the removal of moisture using a solvent. Nowhere in Rowell et al. or Goldstein et al. is a disclosure or teaching of heating wood in a frequency range from

about 6 MHz to about 30 MHz. Accordingly, Applicants assert that one of ordinary skill in the art would not have been motivated to combine any of the references, taken singly or in combination, to achieve the invention as claimed.

Moreover, in the Declaration submitted herewith, Gary Peterson, a co-inventor, explains how the prior art taught heating at frequencies of 2450 MHz and 915 MHz. Calculations were carried out to determine how effective heating at these frequencies would be. These calculations suggested that the penetration depth at this microwave frequency was limited to about 3 to 4 inches. This is practical for processing individual pieces of lumber or pieces stacked with significant spacers between them. However, the processing of small loads is not economical for the lumber industry. Lumber closely stacked in large commercial loads (48"x48"x16 feet) is needed to make the process economically viable. Thus, the use of 2450 MHz energy will result in poor heating uniformity and subsequent poor product quality. A further calculation at 915 MHz demonstrated that it too was insufficient for uniform heating.

In addition, heating at a frequency of 300 MHz or less was not taught in the art for the following reasons: increased chance of arcing at low frequencies – causing excessive downtime; difficulty in finding energy sources having a reasonable capital cost and are also reliable and controllable; difficulty in computing heating patterns and electric field strength; and difficulty in achieving high electrical efficiency and low operation cost.

However, experimental work was then carried out by inventor Peterson and other Weyerhaeuser employees on or about September 2003 to measure the electrical properties (dielectric constant and loss factor) for wood loaded with acetic anhydride in the frequency range of 5-10 MHz – well below the microwave frequency range. The calculated penetration depth was estimated from this data to be well over 200 inches at 30 MHz or less. As a result it was discovered that the heating uniformity for large loads (4'x4'x16 feet) appeared acceptable for a frequency less than 30 MHz. This discovery meant that microwave

frequencies (over 300 MHz) would not be acceptable for heating large loads, but the lower RF frequencies of 3 to 30 MHz would be acceptable.

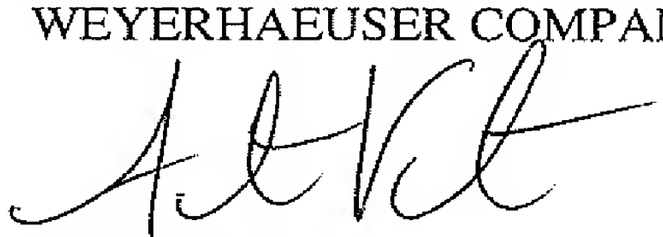
Applicants assert that for the amendments and reasons set forth above, and for those described in the Declaration submitted herewith, independent Claims 1, 19 and 20 are allowable over the references of record. Claims 2-10, 12, 14 and 16-18 depend from Claim 1. These claims are also considered allowable as they set forth further limitations of their base claim.

CONCLUSION

In view of the foregoing discussion, Applicants respectfully submit that Claims 1-10, 12, 14 and 16-20 are in condition for allowance. If the Examiner has any further questions or comments, the Examiner may contact the Applicants' attorney at the number provided below.

RESPECTFULLY SUBMITTED,

WEYERHAEUSER COMPANY



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